

I. INTRODUCTION

Pursuant to the Court's November 10, 2003 Order compelling the deposition of defendant's expert, Allan J. Lightman, Ph.D., plaintiffs respectfully submit this supplemental *Markman* brief to address only EOS's argument that the claim limitation "a temperature below the sintering temperature" in the '070 patent is indefinite.¹

In the event Dr. Lightman's declaration is even considered by the Court, his deposition testimony confirms that the claim limitation "a temperature below the sintering temperature" that appears in the '070 patent is not indefinite. Dr. Lightman's opinion regarding the challenged claim language has nothing to do with the standards for indefiniteness under the patent law,² but rests simply and entirely upon his philosophical view that "laser sintering" is not classical furnace-based "sintering" as that term is used in the "materials processing field." In addition to clarifying this purely semantic notion, Dr. Lightman's deposition established a number of facts that *are* relevant under the patent law: (i) he immediately understood that the '070 patent did not involve classical furnace-based sintering; (ii) he understood that it instead involved fusing particles of powder with heat from a laser beam; (iii) the temperature at which the powder particles will fuse can be easily empirically determined; (iv) he understands what "a temperature below" another "temperature" means; and (v) that the entire rapid prototyping ("RP") industry

¹ Although EOS's indefiniteness argument is addressed here out of an abundance of caution, plaintiffs reiterate that it would be improper to find a patent invalid for indefiniteness as part of the *Markman* process. See *Intervet Am., Inc. v. Kee-Vet, Lab., Inc.*, 887 F.2d 1050, 1053 (Fed. Cir. 1989). Further, in a separate filing, plaintiffs will ask the Court to disqualify Dr. Lightman and strike his declaration entirely, on the grounds that he previously has been an expert consultant to 3D Systems and its predecessor, DTM Corporation ("DTM") in connection with two prior lawsuits.

² See, e.g., *Bose Corp. v. JBL, Inc.*, 274 F.3d 1354, 1359 (Fed. Cir. 2001) ("[T]he language employed must be analyzed — not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art.").

(including EOS) has always used the term “sintering” to refer to the process described in the ‘070 patent.

II. DR. LIGHTMAN’S TESTIMONY NOT ONLY SHOWS THAT HIS “OPINION” IS IRRELEVANT, BUT THAT THE PHRASE “SINTERING TEMPERATURE” IS DEFINITE.

Dr. Lightman admits that his declaration does not discuss “sintering” as that term is used and understood in the RP industry:

Q. In the declaration you are talking about sintering in the classical sense, correct?

A. Correct. In the classical sense? Yes, I refer to it as the classical sense for sintering as it is known *in the materials processing community*.

(Lightman Depo. at 51:18-22; emphasis added.)³ As the deposition unfolded, it became clear that Dr. Lightman used the “materials processing community” as the predicate for his opinion instead of the more relevant rapid prototyping (“RP”) field because, as he admits, there is no confusion to one skilled in the RP field. Indeed, Dr. Lightman concedes that the ‘070 patent does not even pertain to “sintering” as he defines that term:

Q. When you first read the 070 patents [sic], were you confused as to whether the patent was describing a classical sintering operation?

A. Was I confused? No. I don’t think I was confused.

Q. Did you immediately recognize that it was talking about a laser beam instead of a furnace?

A. Yes.

Q. To [f]use the powder?

A. Correct.

³ Copies of pages cited from Dr. Lightman’s deposition (“Lightman Depo.”) are attached as Exhibit 20 to the Declaration of Philip E. Cook filed concurrently in support of this supplemental *Markman* brief. Plaintiffs have previously submitted Exhibits 1 through 19 in support of their opening and responsive *Markman* briefs.

Q. That's not sintering in the classical sense, right?

A. The laser beam for this powder, the process that's described was not sintering.

Q. In the classical sense you mean?

A. Correct. I don't think it's sintering in any sense.

Q. So you understood that in the context of the '070 patent, sintering is referring to a process that uses a laser beam to fuse particles into a cohesive mass?

MR. GANNON: Objection, mischaracterizes his testimony.

A. I thought that they made a mistake in describing the physical process.

Q. What did you think the mistake was?

A. That the process was molding and not sintering.

(Lightman Depo. at 54:19-55:10.)⁴ So, although Dr. Lightman has a philosophical dispute about the semantics of "sintering" and "molding," he admits that his professed confusion about the term "sintering" (as reflected in his declaration) does not extend to those in the RP industry:

Q. Did you also come to understand that others in the rapid prototyping field, as opposed to the materials processing community that you described earlier, also used the term sintering to describe DTM's technology?

A. Yes.

Q. In fact, Carl Deckard used that term, correct?

A. Yes.

(Lightman Depo. at 131:15-23.)⁵

⁴ See also Lightman Depo. at 52:12-17 (Q: "The processes that are described in this patent, is it your understanding that somebody would understand sintering in the classical sense in the context of these processes and these patents?" A: "No. As I told you, these processes described are molding, they are not sintering.").

⁵ Carl Deckard is the named inventor on the '070 patent.

Q. Do you have any understanding of how individuals in the field of rapid prototyping would use these terms?

MR. GANNON: Objection, vague and ambiguous. What individuals?

A. Everybody accepted the term as the trademark of DTM, laser sintering.

Q. And the process that is performed in its machine?

MR. GANNON: Objection, calls for speculation.

A. We told everybody that this wasn't sintering, it was a fusion process, but if they wanted, they could feel free to refer to it as whatever they wanted.

Q. They referred to it as laser sintering since it was first commercialized in the early 90's, correct?

MR. GANNON: Objection, vague and ambiguous.

A. Everybody referenced this as a laser sintering machine.

(Lightman Depo. at 134:19-135:14.) Thus, Dr. Lightman concurs that, as used in the '070 patent, "sintering" refers to a "fusion process" by which the powder particles are fused into a cohesive mass. Dr. Lightman himself has previously equated the terms "sinter" and "fuse" when providing an opinion about a laser sintering patent as DTM's expert witness in the Midwest litigation. (Lightman Depo. at 24:17-25:7, 135:15-19, 137:13-22.) Dr. Lightman's testimony and prior expert report merely confirm that the RP industry has from its inception used the term "laser sintering" in the same manner as it is used in the '070 patent to mean fusing powder particles together by means of a laser beam, and has understood that "sintering temperature" is the temperature at which fusing occurs.⁶

⁶ See also Lightman Depo. at 36:23-37:2 (Q: "Do you recall seeing the phrase laser sintering?" A: "Yes." Q: "When did you first hear of laser sintering?" A: "More than a decade ago, I believe.")

Tellingly, even EOS's own patents use the term "sintering" to refer to the process that takes place in its accused laser sintering machines.⁷ Other examples of EOS's use of the term "sintering" in the laser sintering field are seen in the following:

- EOS's operating manual for one of the accused infringing devices;⁸
- promotional materials available on EOS's website;⁹ and
- EOS's statements in this litigation.¹⁰

Given that EOS itself has always used "laser sintering" and "sintering temperature" in the same way they are used in the '070 patent, it is difficult to imagine what EOS's counsel thought could

⁷ For example, EOS's U.S. Patent No. 5,658,412 ("412 patent") cites Carl Deckard's first issued patent from which the patents-in-suit claim priority, U.S. Patent No. 4,863,538, as an example of the relevant laser sintering technology and states: "In this case the material is a powdorous solid material which is applied in layers to the upper side of a lowerable piston and which is *sintered* at places corresponding to the object by means of a laser." (Cook Decl., Ex. 23 at col. 1:12-16; emphasis added.) The '412 patent also states that Deckard's patent discloses "[a] heater [that] maintains the material at an operating temperature of about 150° C. as required for the *sintering* process." (*Id.* at col. 1:18-20; emphasis added.) Similarly, EOS's U.S. Patent No. 5,908,569 (the "569 patent") also uses the term "sintering" in the laser sintering context. (*Id.*, Ex. 24 at col. 1:5-14, 28-33; col. 3:63-col. 4:29.) Dr. Lightman reviewed EOS's '569 patent when forming his opinion (Lightman Depo. at 84:1-2, 85:4-13), but he apparently overlooked EOS's own use of the term "sintering" to describe the laser sintering process.

⁸ Cook Decl., Ex. 25 at p.2 (entitled: "EOSINT P 700 Laser-Sintering System for plastics"). This EOS manual provides a description of the laser sintering process:

In laser sintering systems a powder material is locally heated and solidified by means of exposure with a laser beam. . . . The powder materials comprise a mixture of components with different melting temperatures. During the laser sintering process the particles of powder are briefly heated to a temperature above the melting point of at least one of the components by means of exposure with the laser beam.

(*Id.* at p.5.1.)

⁹ Cook Decl., Ex. 26 (EOS's brochures for the accused devices, which use polymer or plastic powders as a build material, are replete with references to laser sintering).

¹⁰ EOS has repeatedly used "laser sintering," sometimes interchangeably with "fusing." (See EOS's Preliminary Statement of Non-Infringement and Invalidity, filed June 19, 2003, at p.4.) During the October 17 tutorial, EOS referred to the disclosure of laser sintering by the Housholder patent, which mentions selectively "fusing" the particles with a laser beam.

they could accomplish by manufacturing this baseless invalidity argument,¹¹ propped up with Dr. Lightman's irrelevant opinion.

The irrelevance of that opinion to the patent law issue of indefiniteness, as well as EOS's misapplication of that law, is illustrated by the following testimony:

Q. If the critical date [for determining indefiniteness] were instead of being October 5, 1987 [as stated in paragraph 8 of your Declaration], June 1997 [the patent's issue date], would any of your opinions change?

A. I do not believe so.

Q. Would your opinions remain the same?

A. Yes.

(Lightman Depo. at 42:22-43:2.) In other words, what an ordinarily skilled person in the art would understand in October 1987 — as opposed to what that person would understand in June 1997 — was of no concern to Dr. Lightman (or apparently to EOS's counsel).¹² Yet the issue of indefiniteness of a claim term is to be considered as of the patent's *issue date*, and not its effective filing date, and is to be based upon the materials available to ordinarily skilled person *at that time*:

When a patent is granted, prosecution is concluded, the intrinsic record is fixed, and the public is placed on notice of its allowed claims. Dictionaries, encyclopedias and treatises, publicly available *at the time the patent is issued*, are objective resources that serve as reliable

¹¹ Dr. Lightman testified that EOS's indefiniteness argument is not one he suggested. He merely expressed to EOS's counsel his philosophical view that "laser sintering" is not classical sintering, from which counsel then fashioned the argument that "a temperature below the sintering temperature" is indefinite and the patent invalid under 35 U.S.C. § 112. (Lightman Depo. at 96:1-97:11.) That the claim limitation did not bother Dr. Lightman until encouraged by EOS's counsel is evident from his conduct. Although he highlighted a few claim terms on his copy of the '070 patent when he studied it at EOS's request, he did not highlight the phrase "a temperature below the sintering temperature." (*Id.*)

¹² Dr. Lightman, having little if any patent law expertise beyond the work he had done for DTM, testified that he relied entirely upon EOS's counsel to get the legal issues right, including those dates that were relevant and that should be used when formulating his opinion. (Lightman Depo. at 14:21-15:6, 42:9-21.)

sources of information on the established meanings that would have been attributed to the terms of the claims by those of skill in the art.

Texas Digital Sys. Inc. v. Telegenix Inc., 308 F.3d 1193, 1202-03 (Fed. Cir. 2002) (emphasis added).

At bottom, when Dr. Lightman's disdain for the RP industry's use of the term "sintering" in a non-classical sense is set aside, he admits there is no confusion in the challenged claim limitation when a specific temperature is substituted for "sintering temperature":

Q. Would you understand, as a person skilled in the art, when someone says to you temperature below 135 degrees C, would you understand what that means?

A. I would interpret that to mean a temperature not to exceed 135 degrees Centigrade.

(Lightman Depo. at 50:14-18.) He also admits that a person of ordinary skill in the art could determine the sintering temperature at which material would fuse in a laser sintering machine:

Q. If you were given a powder and you were going to use that in a commercial laser sintering machine, could you figure out the temperature at which that powder would fuse?

A. If I were putting it in a commercial so-called sintering machine, such as the DTM or whatever it is now called, I would be able to determine the amount of energy that was needed to be put into the powder in order to liquify the small particles and get them to flow, to mold together all of the material.

Q. How would you determine the amount of energy to liquify the materials?

A. I could do it empirically by taking some of the powder and subjecting it to pulses of different length times at a constant power level and examining the material afterwards.

Q. Are there any other ways?

A. I'm sure there are a variety of ways. That's the one that comes most quickly to mind.

(Lightman Depo. at 74:7-75:3.) Consequently, the challenged claim limitation is not invalid for indefiniteness.¹³ Dr. Lightman admits that no one in the RP field would be confused by it, but would instead understand that “a temperature below the sintering temperature” of the powder used in a laser sintering process means a temperature below that at which the powder will fuse.

III. CONCLUSION

For each of the reasons set forth above, as well as those explained in their November 10, 2003 Responsive *Markman* Brief, plaintiffs UT and 3D Systems respectfully request that the Court reject EOS’s assertion of indefiniteness, should the Court even consider this issue during *Markman* proceedings.

¹³ As Dr. Lightman’s deposition testimony confirms, the challenged claim limitation is actually “plain on its face” to one skilled in the art, so it meets the test for definiteness by a wide margin. *See, e.g., Exxon Research & Eng’g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001) (“We have not insisted that claims be plain on their face in order to avoid condemnation for indefiniteness; rather, what we have asked is that the claims be amenable to construction, however difficult that task may be.”).

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CERTIFICATE OF SERVICE

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